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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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05/03/2005

Shiro Ogata

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27885

7590

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EXAMINER

AUSTIN, AARON

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/533,823	Applicant(s) OGATA ET AL.	
	Examiner AARON S. AUSTIN	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 21-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 5/3/05 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 22 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Guzairova et al. (SU1640136A).

Guzairova et al. teach titania oxide composite wherein the titanium oxide photocatalytic activity is negated by doping with a zinc containing compound.

Guzairova et al. do not appear to teach all photocatalytic activity is lost. However, as like materials are used in a like manner as claimed for the same purpose as claimed, the loss of photocatalytic activity is expected to be as claimed.

Regarding claim 22, Guzairova et al. do not appear to teach the titanium oxide particles are anatase-type, brookite-type, or rutile-type. However, the titanium oxide particles have a photocatalytic activity that is negated through the taught process. One

of ordinary skill in the art would recognize that a titanium oxide with photocatalytic activity is by definition anatase-type, brookite-type, or rutile-type.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guzairova et al. (SU1640136A).

Guzairova et al. teach titania oxide composite as described above.

Guzairova et al. do not appear to teach the molar ratio of the titanium oxide to the zinc compound in the final product. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the amount of zinc compound with respect to the amount of titanium oxide for the intended application of negated photocatalytic activity, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In particular, as Guzairova et al. teach inclusion of a zinc compound can be added to reduce and negate the photocatalytic activity of titanium oxide, one of ordinary skill in the art is provided with motivation to optimize the amount of zinc compound added to achieve the reduction of photocatalytic activity. As like materials are being used in a like manner for the same intended result,

it would be expected that one of ordinary skill in the art would arrive at the claimed molar ratio to obtain the reduction in photocatalytic activity taught by Guzairova et al.

Claims 1-2 and 21 are rejected under 35 U.S.C. 103(a) as obvious over Ogata (US 6,099,969) in view of Oishi et al. (US 5,935,717).

Ogata teaches a film-forming titania-metal composite comprising non-photocatalytic amorphous titanium peroxide (claims 1 and 5).

The composite may be doped with any of a list of ceramic materials which may include copper or nickel compounds (column 5, lines 5-13; claim 4). Ogata et al. do not appear to teach the inclusion of copper, nickel, or compounds thereof are preferred.

However, it would be obvious to try copper, nickel, or compounds thereof in selecting possible additional elements from this finite list. Specifically, as the list of usable materials is short, one of ordinary skill in the art is easily provided motivation to address each of the elements for suitability for the intended purpose and thus arrive at the use of copper, nickel, or compounds thereof as claimed.

Furthermore, Oishi et al. teach addition of a metal such as copper to a titanium oxide film as a catalyst for enhancing the antibacterial and cleaning effects (column 4, lines 16-34). Therefore, as Oishi et al. clearly teach the addition of copper provides the advantage of increasing the antibacterial and cleaning effects of a titanium oxide coating, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include copper in the non-photocatalytic titanium oxide coating of Ogata et al., particularly should any of the coating be converted to anatase-type or

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included with an anatase-type having photocatalytic properties (column 3, lines 41-53 and column 5, lines 41-50).

Regarding claim 21, Ogata and Oishi et al. do not appear to teach the molar ratio of the titanium oxide to the additive (e.g., copper, nickel, or compound thereof) in the final product. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the amount of zinc compound with respect to the amount of titanium oxide for the intended application of negated photocatalytic activity, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In particular, as Ogata teaches inclusion of a copper, nickel, or compound thereof screens ultraviolet rays or the like while preventing static electricity generation (column 5, lines 1-13), one of ordinary skill in the art is provided with motivation to optimize the amount copper, nickel, or compound thereof added to achieve the reduction of photocatalytic activity resultant from ultraviolet rays and the like. As like materials are being used in a like manner for the same intended result (negative effects of ultraviolet rays or the like which cause photocatalytic activity), it would be expected that one of ordinary skill in the art would arrive at the claimed molar ratio to maintain the reduction in photocatalytic activity taught by Ogata.

Claims 22-23 are rejected under 35 U.S.C. 103(a) as obvious over Ogata (US 6,099,969) in view of Oishi et al. (US 5,935,717), and further in view of Guzairova et al. (SU1640136A), Nakao (JP411286619A), and Murasawa et al. (US 6,277,346).

Ogata in view of Oishi et al. teaches film-forming titania-metal composites comprising titanium oxide without photocatalytic function as outlined above.

Ogata does not teach inclusion of anatase-type, brookite-type, or rutile-type titanium oxide. More specifically, Ogata teaches the titanium oxide used must not have photocatalytic function and thus photocatalytic anatase-type and rutile-type titanium oxide are not suitable for use in the taught product. Thus amorphous titanium oxide is used due to its lack of photocatalytic activity.

However, Murasawa et al. teach forming a photocatalytic titanium oxide layer over a non-photocatalytic layer wherein the non-photocatalytic layer comprises a CR-90, a treated rutile titanium oxide that has no photocatalytic function available from Ishihara Sangyo Kaisha, Ltd. (Example 8 and corresponding table as well as product sheet from Ishihara Sangyo Kaisha, Ltd.). Therefore, it would be obvious to one of ordinary skill in the art to form the non-photocatalytic intermediate layer of Ogata, used in association with a photocatalytic layer, with a titanium oxide treated to remove its photocatalytic function, such as CR-90, for association with a photocatalytic layer as Murasawa et al. teach treated photocatalytic titanium oxides are functionally suitable for this use.

Likewise, Guzairova et al. provide a functional alternative by teaching a means for reducing photochemical activity of titania (see the rejections et forth above).

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Therefore, as Guzairova et al. teach the photocatalytic activity of titanium oxide may be removed, it would be obvious to one of ordinary skill in the art at the time of the claimed invention that photocatalytic titanium oxide phases (e.g., anatase, rutile, or brookite) may be treated to negate the photocatalytic activity and thus become suitable for use in the product of Ogata. The motivation for doing so at least includes an increase in supply lines for suitable titanium oxide materials in forming the product of Ogata.

Similarly, Nakao provide a functional alternative by teaching the photocatalytic activity of titanium oxide particles may be removed by coating the particles with a polymer. Therefore, as Nakao teaches the photocatalytic activity of titanium oxide may be removed, it would be obvious to one of ordinary skill in the art at the time of the claimed invention that photocatalytic titanium oxide phases (e.g., anatase, rutile, or brookite) may be treated to negate the photocatalytic activity and thus become suitable for use in the product of Ogata. The motivation for doing so at least includes an increase in supply lines for suitable materials in forming the product of Ogata.

Therefore, as Murasawa et al., Guzairova et al., and Nakao all teach treating of photocatalytic titanium oxide can remove the photocatalytic activity, it would be obvious to one of ordinary skill in the art at the time of the claimed invention to treat photocatalytic titanium oxide phases (e.g., anatase, rutile, or brookite) for use in forming the non-photocatalytic layer of Ogata. The motivation for doing so at least includes (1) the teaching of functional equivalency as outlined above, and (2) an increase in supply lines for suitable materials in forming the product of Ogata.

Regarding claim 23, Ogata and Oishi et al. do not appear to teach the molar ratio of the titanium oxide to the additive (e.g., copper, nickel, or compound thereof) in the final product. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the amount of zinc compound with respect to the amount of titanium oxide for the intended application of negated photocatalytic activity, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In particular, as Ogata teaches inclusion of a copper, nickel, or compound thereof screens ultraviolet rays or the like while preventing static electricity generation (column 5, lines 1-13), one of ordinary skill in the art is provided with motivation to optimize the amount copper, nickel, or compound thereof added to achieve the reduction of photocatalytic activity resultant from ultraviolet rays and the like. As like materials are being used in a like manner for the same intended result (negative effects of ultraviolet rays or the like which cause photocatalytic activity), it would be expected that one of ordinary skill in the art would arrive at the claimed molar ratio to maintain the reduction in photocatalytic activity taught by Ogata.

Claims 1-2 and 21 are rejected under 35 U.S.C. 103(a) as obvious over Ogata (US 6,099,969) in view of Murasawa et al. (US 2001/0046937).

Ogata teaches a film-forming titania-metal composite comprising non-photocatalytic amorphous titanium peroxide (claims 1 and 5).

The composite may be doped with any of a list of ceramic materials which may include copper or nickel compounds (column 5, lines 5-13; claim 4). Ogata et al. do not appear to teach the inclusion of copper, nickel, or compounds thereof are preferred.

However, it would be obvious to try copper, nickel, or compounds thereof in selecting possible additional elements from this finite list. Specifically, as the list of usable materials is short, one of ordinary skill in the art is easily provided motivation to address each of the elements for suitability for the intended purpose and thus arrive at the use of copper, nickel, or compounds thereof as claimed.

Furthermore, Murasawa et al. teach addition of a metal such as copper, nickel, cobalt, iron, or zinc to a titanium oxide film as a catalyst for enhancing the antibacterial and cleaning effects (paragraph [0013] and claim 12). Therefore, as Murasawa et al. clearly teach the addition of such a metal provides the advantage of increasing the effectiveness of a titanium oxide coating, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include a metal such as copper, nickel, cobalt, iron, or zinc in the non-photocatalytic titanium oxide coating of Ogata et al., particularly should any of the coating be converted to anatase-type or included with an anatase-type having photocatalytic properties (column 3, lines 41-53 and column 5, lines 41-50).

Regarding claim 21, Ogata and Murasawa et al. do not appear to teach the molar ratio of the titanium oxide to the additive (e.g., copper, nickel, or compound thereof) in the final product. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the amount of zinc compound with respect to the amount of titanium oxide for the intended application of negated photocatalytic activity, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In particular, as Ogata teaches inclusion of a copper, nickel, or compound thereof screens ultraviolet rays or the like while preventing static electricity generation (column 5, lines 1-13), one of ordinary skill in the art is provided with motivation to optimize the amount copper, nickel, or compound thereof added to achieve the reduction of photocatalytic activity. As like materials are being used in a like manner for the same intended result (negative effects of ultraviolet rays or the like which cause photocatalytic activity), it would be expected that one of ordinary skill in the art would arrive at the claimed molar ratio to maintain the reduction in photocatalytic activity taught by Ogata.

Claims 22-23 are rejected under 35 U.S.C. 103(a) as obvious over Ogata (US 6,099,969) in view of Murasawa et al. (US 2001/0046937), and further in view of Guzairova et al. (SU1640136A), Nakao (JP411286619A), and Murasawa et al. (US 6,277,346).

Ogata in view of Murasawa et al. '937 teaches film-forming titania-metal composites comprising titanium oxide without photocatalytic function as outlined above.

Ogata does not teach inclusion of anatase-type, brookite-type, or rutile-type titanium oxide. More specifically, Ogata teaches the titanium oxide used must not have photocatalytic function and thus photocatalytic anatase-type and rutile-type titanium oxide are not suitable for use in the taught product. Thus amorphous titanium oxide is used due to its lack of photocatalytic activity.

However, Murasawa et al. '346 teach forming a photocatalytic titanium oxide layer over a non-photocatalytic layer wherein the non-photocatalytic layer comprises a CR-90, a treated rutile titanium oxide that has no photocatalytic function available from Ishihara Sangyo Kaisha, Ltd. (Example 8 and corresponding table as well as product sheet from Ishihara Sangyo Kaisha, Ltd.). Therefore, it would be obvious to one of ordinary skill in the art to form the non-photocatalytic intermediate layer of Ogata, used in association with a photocatalytic layer, with a titanium oxide treated to remove its photocatalytic function, such as CR-90, for association with a photocatalytic layer as Murasawa et al. teach treated photocatalytic titanium oxides are functionally suitable for this use.

Likewise, Guzairova et al. provide a functional alternative by teaching a means for reducing photochemical activity of titania (see the rejections et forth above). Therefore, as Guzairova et al. teach the photocatalytic activity of titanium oxide may be removed, it would be obvious to one of ordinary skill in the art at the time of the claimed invention that photocatalytic titanium oxide phases (e.g., anatase, rutile, or brookite) may be treated to negate the photocatalytic activity and thus become suitable for use in the product of Ogata. The motivation for doing so at least includes an increase in supply lines for suitable titanium oxide materials in forming the product of Ogata.

Similarly, Nakao provide a functional alternative by teaching the photocatalytic activity of titanium oxide particles may be removed by coating the particles with a polymer. Therefore, as Nakao teaches the photocatalytic activity of titanium oxide may be removed, it would be obvious to one of ordinary skill in the art at the time of the claimed invention that photocatalytic titanium oxide phases (e.g., anatase, rutile, or brookite) may be treated to negate the photocatalytic activity and thus become suitable for use in the product of Ogata. The motivation for doing so at least includes an increase in supply lines for suitable materials in forming the product of Ogata.

Therefore, as Murasawa et al. '346, Guzairova et al., and Nakao all teach treating of photocatalytic titanium oxide can remove the photocatalytic activity, it would be obvious to one of ordinary skill in the art at the time of the claimed invention to treat photocatalytic titanium oxide phases (e.g., anatase, rutile, or brookite) for use in forming the non-photocatalytic layer of Ogata. The motivation for doing so at least includes (1)

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the teaching of functional equivalency as outlined above, and (2) an increase in supply lines for suitable materials in forming the product of Ogata.

Regarding claim 23, Ogata and Murasawa et al. do not appear to teach the molar ratio of the titanium oxide to the additive (e.g., copper, nickel, or compound thereof) in the final product. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the amount of zinc compound with respect to the amount of titanium oxide for the intended application of negated photocatalytic activity, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In particular, as Ogata teaches inclusion of a copper, nickel, or compound thereof screens ultraviolet rays or the like while preventing static electricity generation (column 5, lines 1-13), one of ordinary skill in the art is provided with motivation to optimize the amount copper, nickel, or compound thereof added to achieve the reduction of photocatalytic activity resultant from ultraviolet rays and the like. As like materials are being used in a like manner for the same intended result (negative effects of ultraviolet rays or the like which cause photocatalytic activity), it would be expected that one of ordinary skill in the art would arrive at the claimed molar ratio to maintain the reduction in photocatalytic activity taught by Ogata.

Response to Arguments

Applicant's arguments, see the Remarks, filed 9/30/08, with respect to the rejections over Oishi et al. (US 5,935,717) and Murasawa et al. (US 2001/0046937), alone and in combination, have been fully considered and are persuasive. These rejections have been withdrawn.

Applicant's arguments filed with respect to the Ogata reference have been fully considered but they are not persuasive.

In particular, with respect to claims 1-2, Applicant argues unexpected results occur as a result of the claimed combination, particularly a lack of photocatalytic activity. However, the claimed combination is provided for by Ogata, alone and in combination with the cited references. Furthermore, the product of Ogata does not have photocatalytic activity. More particularly, Ogata provides for doped titanium peroxide composite with no photocatalytic activity. The fact that Ogata primarily teaches amorphous titanium peroxide does exclude the reference from the breadth of the claims (see in particular claim 2 which claims amorphous titanium oxide modified with peroxy groups). Thus Applicant's argument that the unexpected result of no photocatalytic activity does not overcome the reference as the claimed combination of elements are present in the rejection presented and the lack of photocatalytic activity is present as set forth in the rejection above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **AARON S. AUSTIN** whose telephone number is (571)272-8935. The examiner can normally be reached on Monday-Friday: 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John J. Zimmerman/
Primary Examiner, Art Unit 1794

/Aaron Austin/
Examiner, Art Unit 1794